

REMARKS

Reconsideration is respectfully requested. Claims 1-8 and 10-42 are currently pending.

Claim Rejections – 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 1-8 and 10-41 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for failing to particularly point out and claim the subject matter with the applicants regard as the invention.

The Examiner has stated that the term “green regenerative tissue” is unclear because there is no teaching of how to differentiate “green” tissue from “non-green” tissue.

Applicant respectfully disagree with the Examiner’s rejection and the above characterization. However, in order to facilitate prosecution in this case applicants have amended the pending claims, without prejudice or disclaimer, to remove the recitation “green regenerative tissue” from claims 1 and 11. Thus claims 1-8 and 10-24 are now definite because they do not include the recitation “green regenerative tissue.”

Before addressing this rejection, the applicants wish to clarify the nomenclature used in the specification. The Examiner has cited to page 2 and page 3, line 1, as indicating that green regenerative tissue is synonymous with green callus and therefore green regenerative tissue can be any callus tissue that happens to be green. As indicated in the specification, green regenerative tissue may be obtained from callus tissue and is therefore referred to in the specification as green callus, but the specification is clear that such green callus is morphologically distinct from other callus tissue. See, for example, page 41, lines 7 through 10, “Once a callus having the appropriate morphology under dim light conditions was identified (green, shiny, nodular, compact), the sectors could be easily separated from the remaining callus and maintained on either DBC2 or DBC3 medium. To avoid confusion, the applicants have used in the claims the term “green regenerative tissue”, which is defined in the specification as discussed below.

The recitation “green regenerative tissue” is clearly defined in the specification. See MPEP § 2173.02: “Definiteness of claim language must be analyzed in, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.” In this instance, the specification clearly conveys to one of skill in the art what the term “green regenerative tissue” means. Plant tissue, such as callus, under the right growth conditions can be induced to produce transformed structures that are competent to regenerate into a whole plant. The plant material that grows from the plant tissue into the transformed structures is referred to as “highly regenerative tissue”. Thus, green regenerative tissue is highly regenerative tissue produced under conditions of dim light. The green indicates that the tissue is different from the regenerative tissue grown in the dark which is less green or not green at all and is more prone to regenerate into albino plants. By contrast, regenerative tissue grown under dim light as claimed is more green and much more likely to grow into green plants. See, for example, page 4 of the specification. “Dim light conditions also permit one to screen for green portions of the callus (for barley, for example; yellow-green portions for wheat).” Thus “green” is meant to differentiate regenerative tissue grown in the dark which is not green and more prone to regeneration of albino plants. (See, for example, pg 44, lines 16-20).

The Examiner has stated that it is unclear where green regenerative tissue would fall on the recited color scale and indicates that some callus tissue is greenish in color. However, the specification makes clear that green regenerative tissue is not merely plant tissue that happens to be green. The specification clearly indicates that such highly regenerative tissue is distinguishable from the surrounding non-regenerative tissues by the color *and the morphology* of the highly regenerative tissue. Moreover, the specification clearly conveys to one of ordinary skill in the art the additional morphological characteristics that make up “green regenerative tissues.” The callus when grown under dim light conditions can become “transformed structures” which are identifiable by their morphology: “shiny, nodular, and compact”. See page

102, lines 2-6. As stated in the declaration of Myeong-Je Cho, submitted with this response (the “Cho Declaration”), one of skill in the art could clearly differentiate green regenerative tissue from the surrounding tissue that produced it. The figure included with the Cho Declaration clearly shows that the green regenerative tissue is more green, more shiny and more nodular. The fact that green regenerative tissue is also compact while the non-green regenerative tissue is softer and more friable is a physical feel that cannot be reproduced in a picture, but is an important distinction that one of ordinary skill in the art would understand nonetheless.

Page 41, lines 5-25 discuss how to produce and maintain green regenerative tissue. Thus, merely following the teachings of the patent application will allow one of ordinary skill in the art to generate such tissue. As indicated in the Declaration of Myeong-Je Cho included with this response (the “Cho Declaration”), culturing plant tissue under the claimed conditions will produce patches of distinctly different tissue that one of skill in the art will immediately recognize as green regenerative tissue. Thus, the specification clearly conveys to one of ordinary skill in the art what green regenerative tissue is.

Therefore, the term “green regenerative tissue” is definite. Applicants respectfully request that the Examiner withdraw the § 112, second paragraph rejection.

Claim Rejections – 35 U.S.C. § 102

Claims 1-8, 10-16, 25-27, 29-31, 33-37 and 39-42 have been rejected under 35 U.S.C. § 102 as being anticipated by Wan, Y. and Lemaux, P.G. (Plant Physiology 104:37-48 (1994)) and Vasil, U.S. 5,405,765.

The applicants respectfully disagree. As a starting matter, the Examiner has asserted that the dim light of 10-30 μE lacks a showing of criticality because the claims lack a duration period. Claim 1 now recites that the culturing under dim light must continue “for a time sufficient to promote proliferation of said transformed plant cell.” Thus, the dim light must begin at a point before the cells have begun to proliferate into the transformed structures and

continue at least until after the cells begin to proliferate into the transformed structures that can be regenerated into whole plants. Claims 25 and 35 recite that the culturing under dim light must continue “for a sufficient time to produce green regenerative tissue.” In one example in the specification, the culturing in dim light takes 5-20 days (See page 41, line 5). This one example is not intended to limit the exposure to 5-20 days, but rather show that the culturing “for a sufficient time to produce green regenerative tissue” can not be an infinitely short exposure of dim light. Finally, Claim 32 indicates that the incubation under dim light conditions continues for the length of time necessary to produce green regenerative tissues, which is not a negligible time as discussed above. All three of these time components indicate that the dim light exposure cannot be read as infinitely short or infinitely long as suggested by the Examiner, thus the dim light conditions do not lack criticality and may not be read out of the claims.

In order to anticipate, a cited reference must teach all elements of the claim. In this case, the claim includes a limitation that the plant tissue must be cultured under dim light. The dim light conditions are now defined as approximately 10 to 30 μ E and as discussed above have a clear duration. Thus, neither Wan nor Vasil teach culturing transformed plant cells under dim light “approximately 10 to 30 μ E” either “for a time sufficient to promote proliferation of said transformed plant cell” or “for a sufficient time to produce green regenerative tissue”. Thus both are missing a claim element and therefore do not anticipate the claimed invention.

The Examiner has asserted that Wan et al. teach culturing a transformed plant cell under dim light conditions citing to page 38, 2nd column, 3rd line. The cited paragraph does not refer to conditions used to culture transformed plant cells or tissue. The paragraph refers to growing *whole plants* of 10 cm in height under dim light in order to vernalize the *whole plants*. In claim 1 of the present invention, the transformed plant cells are grown under dim light *for a time sufficient to promote proliferation of said transformed plant cell, thereby promoting proliferation and formation of a transformed structure that is competent to regenerate*. Therefore, the exposure clearly occurs before the plant cells have regenerated into a whole plant. Thus Wan et al fail to teach culturing plant cells in dim light before they have regenerated into whole plants as

in claim 1. Furthermore in claims 25 and 35, the duration is based on the time it takes to produce green regenerative tissue from the plant tissue. As stated in the Cho Declaration, exposing whole plants to light of 10-15 μ E will not produce green regenerative tissue. Also, the paragraph in Wan *et al.* refers to growing the whole plants in growth chambers fertilized with Osmocote. The whole plants exposed to light of 10-15 μ E were not cultured in growth media comprising auxin, cytokinin and copper. Finally, claim 32 covers incubating germinating seed tissue under dim light conditions while Wan *et al.* teach growing whole plants 10 cm high under light of 10-15 μ E. Thus, Wan *et al.* does not anticipate the claimed invention because the light conditions of 10-15 μ E taught in Wan *et al.* do not relate to the dim light conditions claimed.

Applicants therefore request that the Examiner withdraw the 35 U.S.C. § 102 rejection.

Claim Rejections – 35 U.S.C. § 103

Claims 1-8 and 10-42 have been rejected under 35 U.S.C. § 103 as being unpatentable over Wan, Y. and Lemaux, P.G. (Plant Physiology 104:37-48 (1994)) and Vasil, U.S. 5,405,765.

As discussed above, neither Wan nor Vasil teach the claim limitation of culturing transformed plant cells, green regenerative tissue or germinating seed tissue under dim light “approximately 10 to 30 μ E” either “for a time sufficient to promote proliferation of said transformed plant cell” or “for a sufficient time to produce green regenerative tissue”. Thus, no *prima facie* case has been established.

Applicants respectfully request that the Examiner withdraw the 35 U.S.C. § 103 rejection.

CONCLUSION

In light of the above, applicants submit that the pending claims are in condition for allowance. Should there be any remaining issues that remain unresolved; the Examiner is encouraged to contact the undersigned by telephone.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 416272002220. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: January 26, 2004

By: Otis B. Littlefield
Otis B. Littlefield
Registration No. 48,751

Morrison & Foerster LLP
425 Market Street
San Francisco, California 94105-2482
Telephone: (415) 268-6237
Facsimile: (415) 268-7522